

## ITRAC-2:

**2<sup>nd</sup> Advanced Training Course on Illicit Trafficking and Radiological Consequences with NUCLEONICA, ITU Karlsruhe, 22-24<sup>th</sup> April 2009**

**The NUCLEONICA Nuclear Science Portal**  
**([www.nucleonica.net](http://www.nucleonica.net))**

**J. MAGILL**

*European Commission, Joint Research Centre,  
Institute for Transuranium Elements,  
Postfach 2340, 76125 Karlsruhe, Germany*



- Introduction to Nucleonica
- Community pages, Nuclear applications, Wiki

## What is NUCLEONICA?

- NUCLEONICA is a new nuclear science web portal from the European Commission's Joint Research Centre. The portal provides a customisable, integrated environment and collaboration platform for the nuclear sciences using the latest internet "Web 2.0" dynamic technology.
- NUCLEONICA is aimed at professionals, academics and students working with radionuclides in fields as diverse as the life sciences (e.g. biology, medicine, agriculture), the earth sciences (geology, meteorology, environmental science) and the more traditional disciplines such as nuclear power, health physics and radiation protection, nuclear and radiochemistry, and astrophysics.



The screenshot shows the NUCLEONICA web portal interface. At the top, there is a navigation bar with links: Home | Sitemap | About us | EN ISO 9001:2000 | Legal Notice. The main header features the NUCLEONICA logo and the tagline "... web driven nuclear science". Below the header, there is a login section with fields for "username" and "password", and a "Login" button. The main content area is divided into several sections:

- Welcome**: A sidebar menu with links to Home, Free Access, Nucleonica [wiki], Karlsruhe Nuclide Chart, News Releases, Educational Resources, Training Courses, Ask an Expert, About Us, and Contact.
- Nucleonica - web driven nuclear science**: A central section featuring a large image of a hand pointing at a periodic table of elements.
- NUCLEAR NEWS**: A section with three news items:
  - Terror suspect 'had other targets'**: A news item dated FEB 18 about an alleged plane bomb plot.
  - War and peace**: A news item dated FEB 18 about the Islamic revolution in Iran and the seizure of the US embassy in Tehran.
  - Kuwait eyes nuclear power with French help - paper**: A news item dated FEB 18 about Kuwait considering developing nuclear power.
- NUCLEONICA HOT TOPICS**: A section with a link to "New Nucleonica Training Course" dated January 31, 2009.
- 1st Advanced Training Course on Illicit Trafficking and Consequence Management with NUCLEONICA**: A section with text about a course taking place on the 22-24th April 2009 at the Institute for Transuranium Elements, Karlsruhe.
- NUCLEONICA**: A section with a description of the portal as a new nuclear science web portal from the European Commission's Joint Research Centre.
- NUCLEONICA is aimed at**: A section with a description of the portal's target audience: professionals, academics, and students working with radionuclides in various fields.
- NUCLEONICA provides**: A section with a description of the portal's services: "software as a service" on the web, adding stability and security, and avoiding version compatibility and update problems.

Home | Sitemap | About us | EN ISO 9001:2000 | Privacy Statement | Legal Notice

**nucleonica** ... web driven nuclear science


Wednesday, September 30, 2009

Home

username  Login

- Welcome
- Free Access
- Nucleonica [blog]
- Nucleonica [wiki]
- Karlsruhe Nuclide Chart
- News Releases
- Educational Resources
- Training Courses
- Ask an Expert
- FAQ
- About Us
- Contact

## Nucleonica - web driven nuclear science



NUCLEONICA is a new nuclear science web portal from the European Commission's Joint Research Centre. The portal provides a customisable, integrated environment and collaboration platform for the nuclear sciences using the latest internet "Web 2.0" dynamic technology.

NUCLEONICA is aimed at professionals, academics and students working with radionuclides in fields as diverse as the life sciences (e.g. biology, medicine, agriculture), the earth sciences (geology, meteorology, environmental science) and the more traditional disciplines such as nuclear power, health physics and radiation protection, nuclear and radiochemistry, and astrophysics. It is also used as a knowledge management tool to preserve nuclear knowledge built up over many decades by creating modern web-based versions of so-called legacy computer codes.

NUCLEONICA provides "software as a service" on the web rather than through installed software, adding a greater level of stability and security and avoiding version compatibility and update problems. In addition, all NUCLEONICA's web applications are browser and operating system independent and can therefore be accessed by most web browsers.

NUCLEONICA offers the following main features:

### NUCLEONICA HOT TOPICS

**>> New Nucleonica Training Course... ITRAC-2**

August 17, 2009

The 2nd Advanced Training Course on Illicit Trafficking and Radiological Consequences (ITRAC-2) with NUCLEONICA will take place at ITU, Karlsruhe from

**KARLSRUHE NUCLIDE CHART**

**>> Karlsruhe Nuclide Chart special event on 9th Dec. 2008**

January 09, 2009

New book now available!...for more information click link

### NUCLEAR NEWS

**N-energy benefits should not remain confined to few: PM**

**SEP 30** Manmohan Singh today said benefits of atomic energy should not remain confined to a 'privileged few' as it was vital to meet power requirements of developing countries. [...]

**For sale: Fisherman's cottage in nature reserve (Oh, and it's next to two nuclear power stations)**

**SEP 30** For sale: Fisherman's cottage in nature reserve (Oh, and it's next to two nuclear power stations) [...]

**Analysis: Iran plant could defer Israel strike**

**SEP 30** JERUSALEM (AP) – It may seem counterintuitive, but the news that Iran has a second, clandestine uranium enrichment plant, and has just test-fired long-range missiles, could actually put off any plans [...]

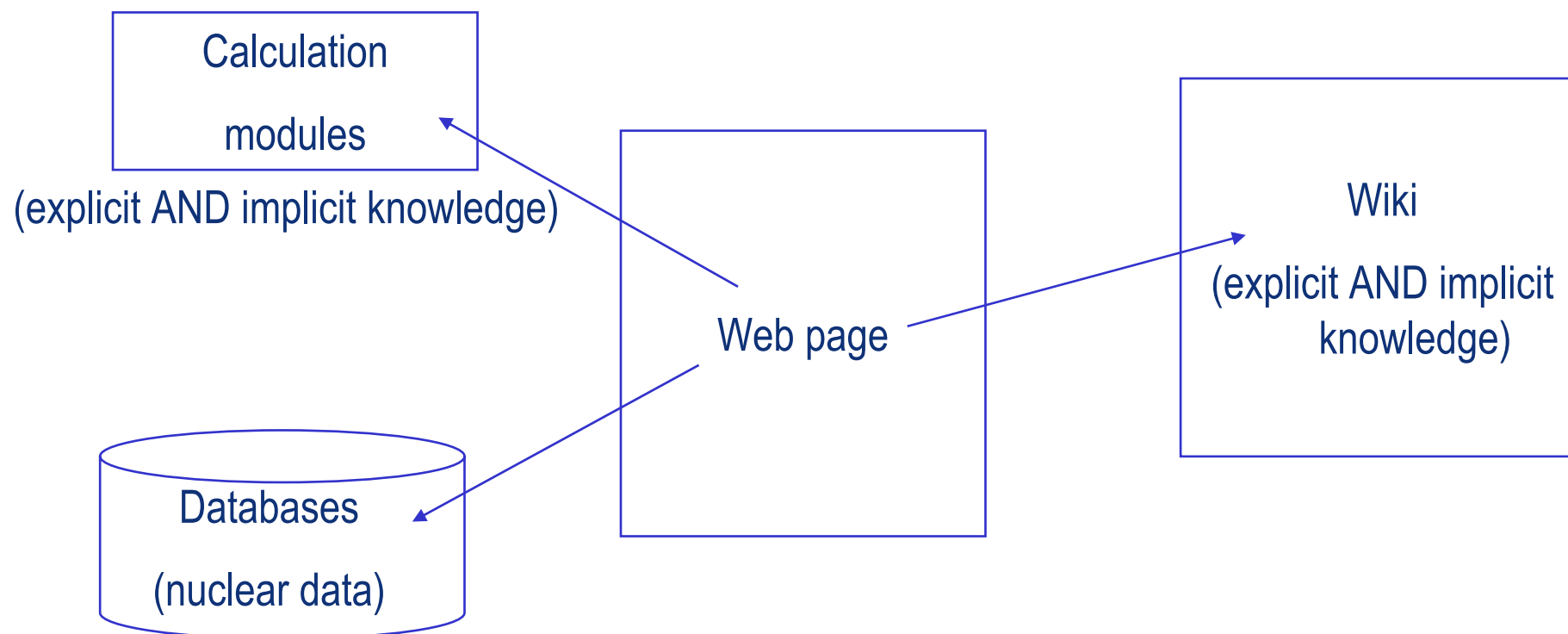
**India's allotment for nuclear parks hailed**

**SEP 30** The US India Business Council has welcomed India's move to reserve sites for the US commercial nuclear technology and described it as a significant step towards implementing the US-India civil nuclear [...]

**Bulgaria Belene Nuclear Plant to Bring EUR 80 B over 60 years**

**SEP** If built, the Bulgarian Belene

## Nucleonica Architecture & Logical Structure...



**The NUCLEONICA Structure**



## NUCLEONICA

- NUCLEONICA's "Learning Centres"
- Unique feature: Web-based Nuclear Science Applications
- New Approach to Knowledge Management, Education and Training: use of social networking tools
- NUCLEONICA as a platform for scientific applications development



The screenshot displays the NUCLEONICA web portal. The header features the 'nucleonica' logo and the tagline '... web driven nuclear science'. A navigation menu on the left includes links for Welcome, Free Access, Karlsruhe Nuclide Chart, News Releases, Educational Resources, Training Courses, Ask an Expert, About Us, and Contact. The main content area is titled 'Nucleonica - web driven nuclear science' and features a large image of a hand pointing at a colorful periodic table. Below this image, a section titled 'NUCLEONICA HOT TOPICS' highlights a 'New Nucleonica Training Course' scheduled for January 31, 2009. The right sidebar contains 'NUCLEAR NEWS' with several articles, including 'Terror suspect 'had other targets'', 'War and peace', 'Kuwait eyes nuclear power with French help - paper', 'Airliner bomb trial: 'Terrorist had limitless ambitions'', and 'Nuclear claim in 'bomb plot' case'.

# Four Pillars of NUCLEONICA: Nucleonica's "Learning Centres"

## • Data Centre

**Nuclear Data Retrieval**

Nucleonica/IEFF-3.1 EGAF Prompt Gammas ICRP 8th Table of Isotopes

Select Database: Nucleonica

Nuclide Search Radiation Search Advanced Search

**Radiation Search - Search Variables & Range**

☒ Gamma and X-Rays Energy: 300 +/- 1 keV  
☐ Alpha 600 +/- 1 keV  
900 +/- 1 keV

Z: Element: Mass number: Half-life: Seconds

Search Save to my defaults Reset

Search returned 6 results  
Number of nuclides (ground + isomeric states): 2

Nuclides	Gamma and X-Rays (keV)	Emission Probability	Half-life
60 Nd 151	900.2	0.001463	12.44 (± 7) m
95 Am 241	899	6.84E-10	432.8 (± 7) y
60 Nd 151	600.8	0.0002527	12.44 (± 7) m
95 Am 241	599.6	2.232E-09	432.8 (± 7) y
60 Nd 151	300.58	0.018221	12.44 (± 7) m
95 Am 241	300.2	1.188E-07	432.8 (± 7) y

## • Knowledge Centre

**Nucleonica Networking**

- Start
- My Profile
- My Contacts
- My Mailbox
- My Groups

**Free Applications**

- Forum
- Conference Calendar
- Graphics Module

**Upgrade Applications**

- Nuclear science

**Coming soon**

- Open call for JRC Traineeships
- Review of Nucleonica in NKS news 2007/3
- Proceedings of the 9th Nucleonica Training Course now available

**Open call for JRC Traineeships**  
November 14, 2007  
ITU's first open call for JRC-Traineeships has been published on our website. The deadline for applications is 6 December 2007 (midnight). In particular we have a position for assistance in the development of an electronic version of the Karlsruhe Nuclide Chart. For more details...

**US talks tough over Iran, warns China**  
The US has pledged to step up its drive for new UN sanctions on Iran and warned China against blocking diplomatic efforts to halt the Islamic republic's nuclear ambitions.  
Source: expressindia Language: EN Date: 2007-11-16T07:41+0100

**North and South Korea to launch regular cross-border train service**  
The train service, limited to freight, will launch next month for the first time in more than half a century.  
Source: HT Language: EN Date: 2007-11-16T07:31+0100

**US talks tough on Iran, warns China**  
WASHINGTON (AP) - The United States accused Iran Thursday of "stringing along" UN watchdogs investigating its nuclear ambitions and bluntly warned China not to block new sanctions against the Islamic republic.  
Source: ntp-english Language: EN Date: 2007-11-16T07:10+0100

**IAEA gives clean bill to Iran on its plan**  
Vie posted at: 11/16/2007 8:12:22 Source: AP Vienna - A report from the UN nuclear watchdog agency yesterday found Iran to be generally truthful about key aspects of its nuclear history, but it warned that its knowledge of Tehran's present atomic work was shrinking.  
Source: thepeninsulapost Language: EN Date: 2007-11-16T08:30+0100

**Welcome, Joe**  
Edit Preferences  
My Profile My Community  
My Community Events  
You have 0 new messages  
You have 0 new contact list requests  
Recent Nucleonica Members  
Vina Golu Constantin Dubale  
Adrian Tinotte Brzila Lozneanu

## • Application Centre

**nucleonica** ... web driven nuclear science

Applications My Preferences Help New Alerts

**Nuclide Explorer**

Actual Chart: Karlsruhe

**Search Nucleonica Documentation**

Nuclear Data Retrieval

**Application Centre**

- Mass Activity Calculator
- Decay Engine
- Dosimetry & Shielding
- Range & Stopping Power
- webKORIGEN
- Universal Nuclide Chart
- Transport & Packaging
- Nuclide mixtures
- Nucleonica Scripting
- Library creation for 3rd party software
- Radiological Dispersion Module
- Extended Graph Module

**Data Centre**

- Physical Constants
- Nuclide Datasheets
- Nuclide Derived Data
- Average Cross Sections
- Radiations
- Prompt Gamma
- Fission Yields

**Knowledge Centre**

- Nuclear News
- Reading room
- Useful Weblinks
- Ask An Expert

**Welcome, Joe**  
Edit Preferences Administration  
MyCommunity Portal  
My Last Nuclides  
82 Pb210  
88 Ra226  
55 Cs137  
40 Zr95  
84 Po210  
My Nuclide Mixtures  
Ra-226 + daughters (1g at 1y)  
Decay Engine Result  
Rb-81 + daughters (190 MBq)  
Rb81(1g)+Kr81m  
Transuramics in 1 ton Spent Fuel (4.2% enriched, 50GWd/t, 6 years cooling)  
My Sources  
natu  
My Messages  
Maintenance Work  
IAEMLS-9 International Conference on Nuclear Analytical Methods in the Life Sciences  
Request for photos of non-stable elements  
User Alerts

## • Community/Networking Centre

**Community Members** Pending Contacts

all users my Contacts

Image	Name	Organization
	HARTINA ADORNI	University of Pisa - DIMNP - GRNSRG
	Aleksandra Schwoinic-Ferrero	Forschungszentrum Karlsruhe - Institute for Nuclear and Energy Technologies
	Mikael Andersson	Westinghouse Electric Sweden AB
	Martin Badertscher	
	Ramiguz Baranczyk	European Commission DG TRIS
	Enrico Barbina	Nable Progetti Srl
	Valerio Barbina	Nable Progetti Srl
	Björn Becker	Forschungszentrum Karlsruhe GmbH, Institut fuer Reaktorsicherheit
	Fabio Belloni	European Commission, DG-JRC, Institute for Transuranium Elements
	Andrey Berlov	Institute for Transuranium Elements, EC JRC
	Yuri Blodid	Forschungszentrum Dresden-Rossendorf
	Emilie BOISE	CEA
	Berkan Cetinkaya	Ege University, Institute of Nuclear Sciences
	Vanessa Chidi	
	Catalina Chitu	

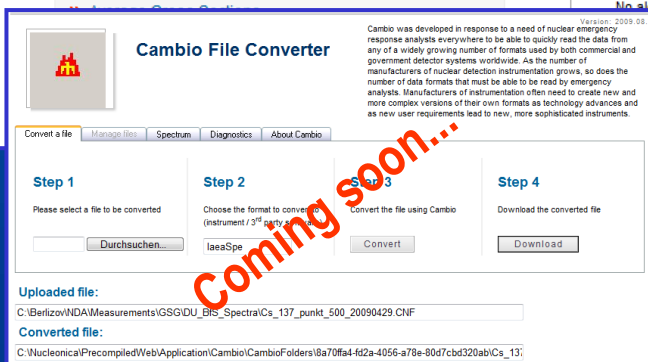
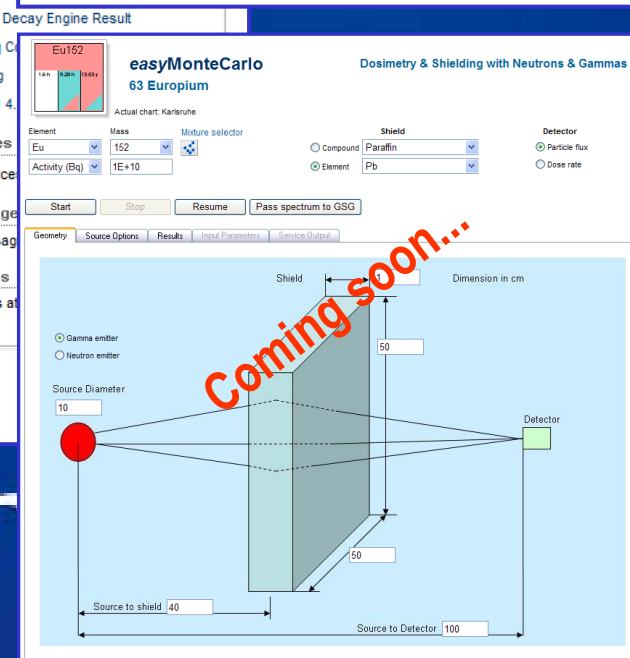
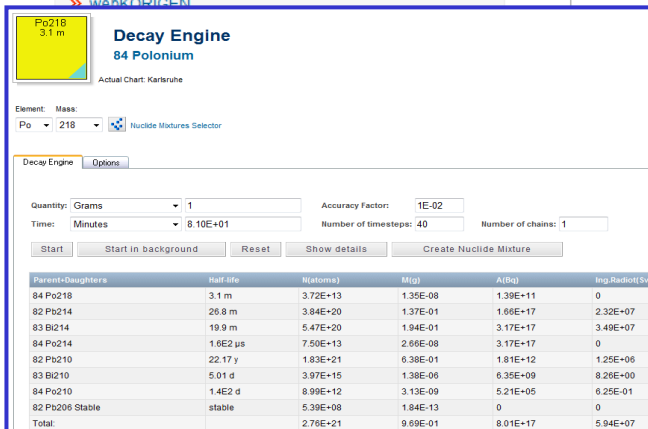
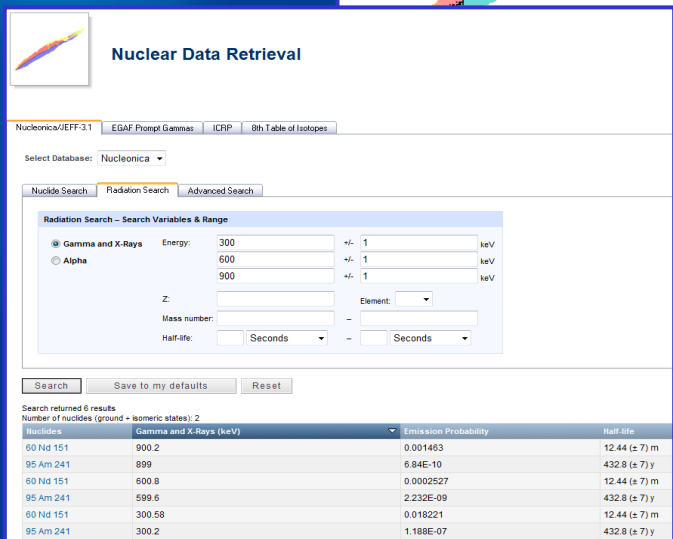
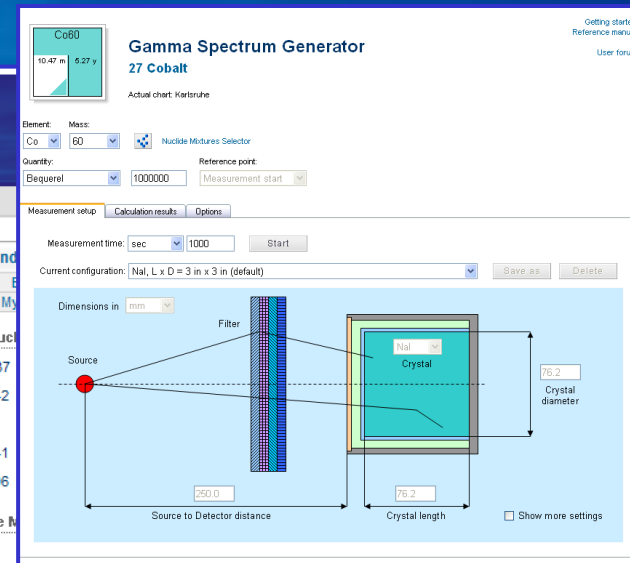
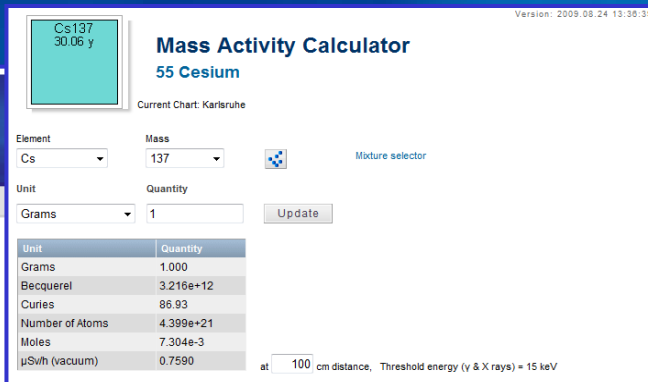
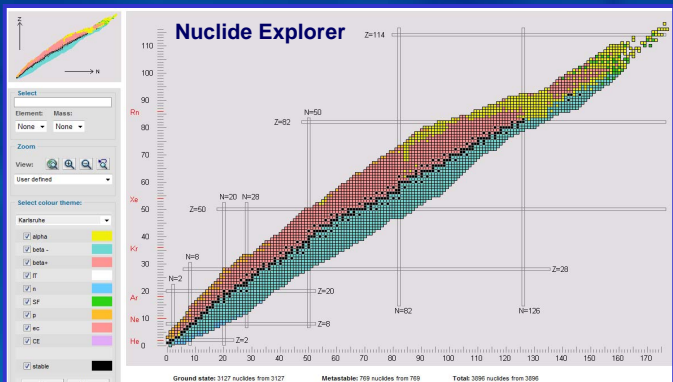
**Profile** Contacts

**Simon Jerome** National Physical Laboratory

Send message Add to Your Contact List

Name: Simon Jerome  
Location: United Kingdom  
Nationality: British  
Organization: National Physical Laboratory  
Job Title: Head of Radiochemistry  
Area of Interest: Radiochemistry, Analytical Chemistry, Radiochemical Analysis, Low-level radioactivity measurement, Inter-laboratory comparisons and proficiency testing, ISO 17225:2005 Technical Assessment, ISO Guide 43  
E-Mail: simon.jerome@npl.co.uk

# Nucleonica's unique feature: Web-based Nuclear Science Applications

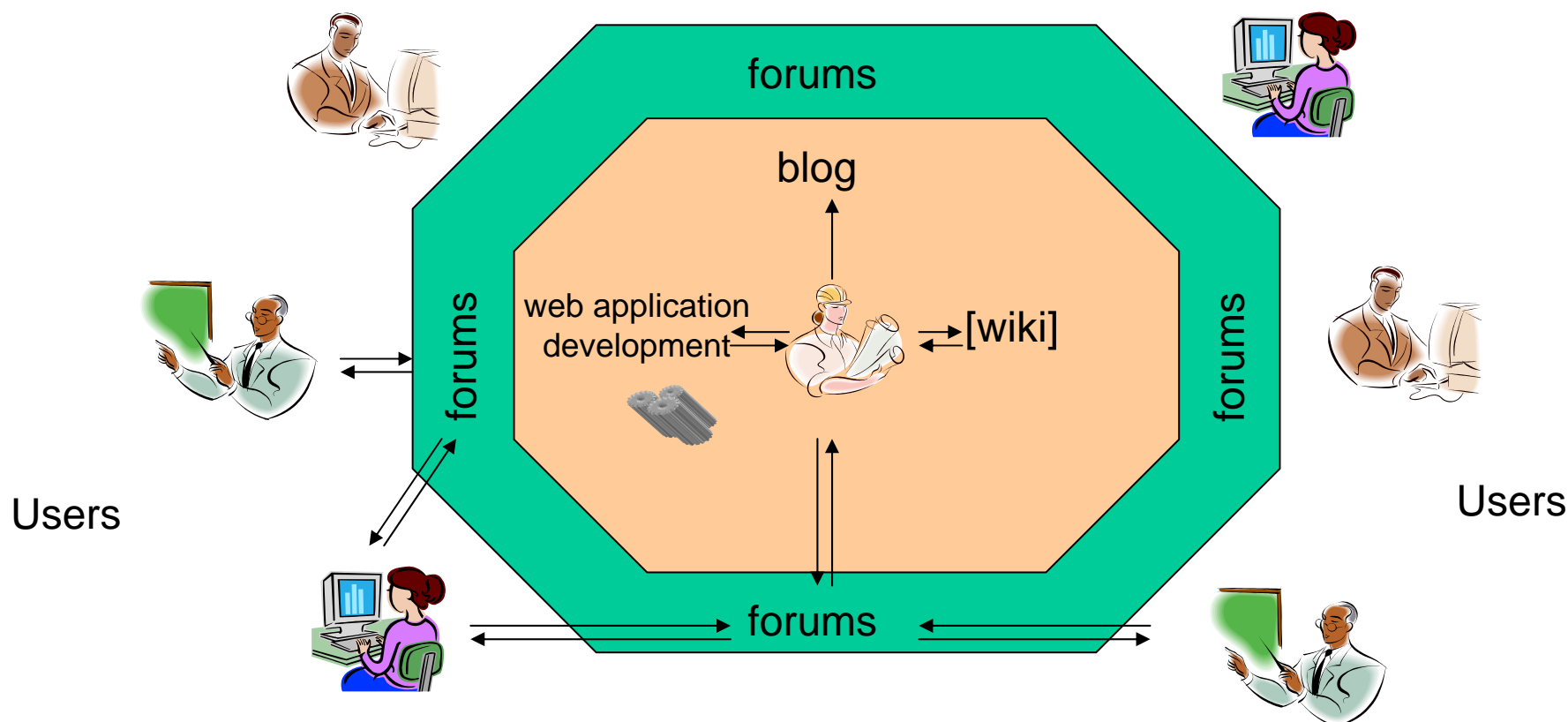


## Other Applications:

- Dosimetry & Shielding,
- Range & Stopping Power,
- webKORIGEN...



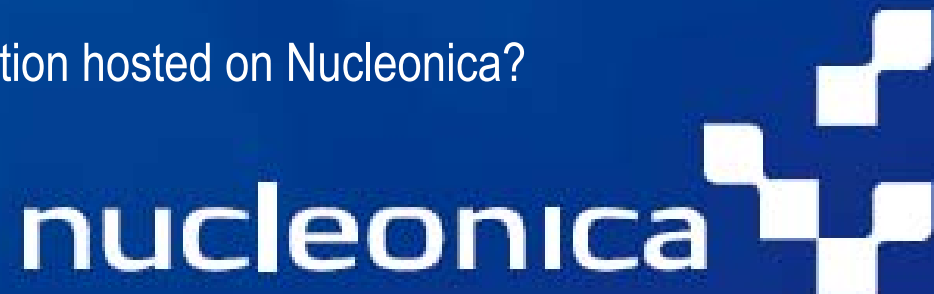
## NUCLEONICA Knowledge Management: Tacit → Explicit Knowledge through the development of communities around the scientific applications (based on Web 2.0 tools)



# NUCLEONICA as a platform for scientific applications development

- Currently NUCLEONICA consists of individual modules
- Modules can be “combined” for batch processing through the NUCLEONICA scripting language
- Open up NUCLEONICA to external developers  
checklist of tools required:
  - access to the NUCLEONICA databases
  - a testing environment where the developer and the NUCLEONICA team can test new application
  - an upload facility whereby the developer can upload the application to the NUCLEONICA platform

Are you interested in having your application hosted on Nucleonica?  
Contact us...



## October 2007 Karlsruhe

[edit]

### 9th Nuclear Science Training Course with Nucleonica, 25/26th Oct. 2007, Ostendorfhaus, Karlsruhe

The 9th Nuclear Science training course on Radioactivity, Radionuclides and Radiation with Nucleonica was held at the Ostendorfhaus, Karlsruhe from the 25th to 26th October, 2007. The two-day course provided a general introduction to the recently released Nucleonica: the new science networking and applications portal. Nucleonica is a powerful and versatile web-based software package for the nuclear science community. With examples and exercises, a variety of core and topical issues in nuclear science and technology were presented by experts in their respective fields.

A total of twenty-nine participants, around half of them women, with a diverse range of backgrounds attended the course. There were participants from Azerbaijan, Belgium, Bulgaria, Czech Republic, Poland, Romania and Turkey. In addition there were 10 participants from the Institute for Transuranium Elements. Among them were students, academics and industry professionals from fields such as nuclear medicine, radiation protection, environmental radioactivity and reactor physics.

[Final Agenda 25th Oct. 2007](#)

[How to get from the hotel to the conference training centre](#)

[Links to the presentations and exercises:](#)

[Networking with Nucleonica \(J. Magill\) Exercises](#)

[Nuclear Data \(J. Galy\) Exercises](#)

[Nuclide Charts \(C. Normand\) Exercises](#)

[Decay Engine \(A. Berlizov\) Exercises](#)

[Dosimetry & Shielding \(J. Galy\) Exercises](#)

[Nuclear Forensics & Illicit Trafficking \(K. Mayer\) Exercises](#)

[Overview of the Institute for Transuranium Elements \(F. Wastin\)](#)

[Advanced Nucleonica Features \(J. Magill\)](#)

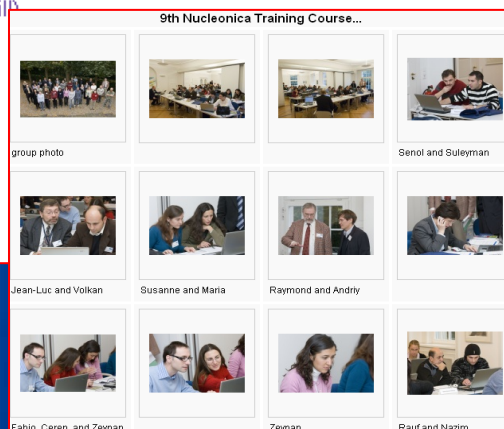
[Training Course Feedback](#)

[QM Questionnaire](#)

[Course Certificate](#)

[List of Participants](#)

[Gallery](#)



Group Photo Oct. 2007, Ostendorfhaus Karlsruhe

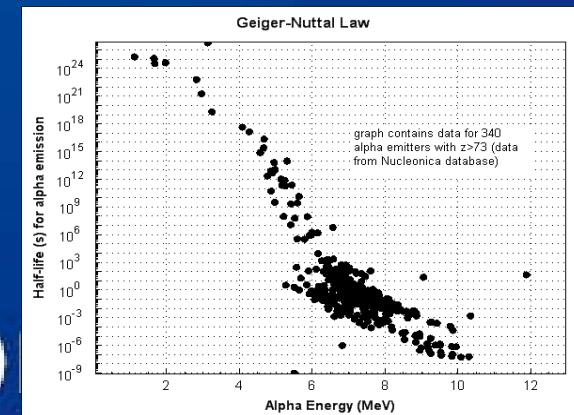
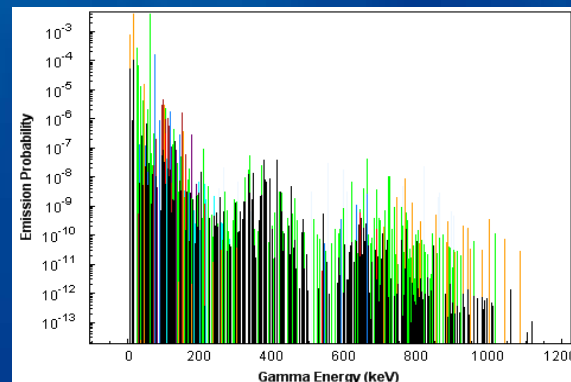
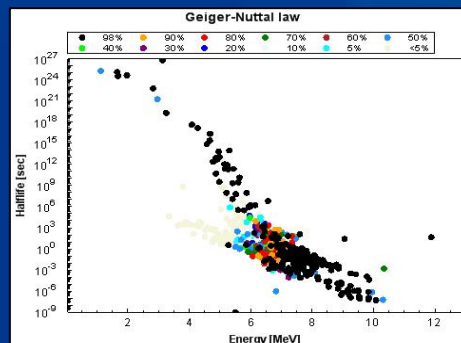
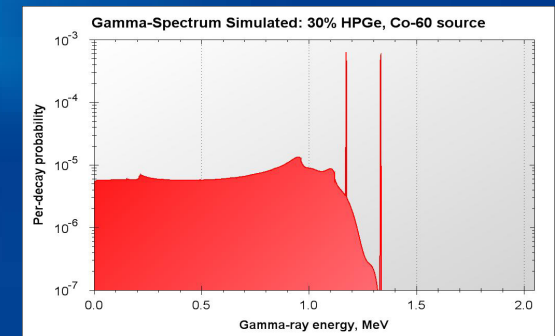
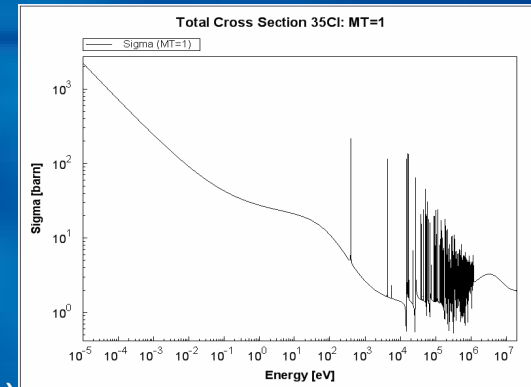


nucleonica

# webGraphics...

## The Nucleonica webGraphics Features:

- No need to buy expensive commercial software
- Easy to use
- Delivers publication quality scientific graphs
- Variety of formats available (gif, jpg, emf, eps, png, svg)
- Graphics configuration can be stored for future use
- Available at any time from any location
- Under constant further development



# Conclusions: Key Advantages of Nucleonica

- Keep informed with the latest news on nuclear issues
- Use internationally evaluated nuclear data in your work
- Extensive range of nuclear science applications
- Manage all your data in a single browser-based system and keep track of your recent activities
- Prepare a lecture or a training course with Nucleonica materials (graphics. etc.)
- Prepare publication quality scientific graphs
- Stay in contact with your colleagues from previous employment, workshops or conferences
- Meet scientists from your areas of interest and build up an international contact list and represent yourself and your Institute/Organisation in the international science community



nucleonica





# Community pages, Nuclear applications, Wiki

Login:



[www.nucleonica.net](http://www.nucleonica.net)

Logged in as: magill [Networking](#) [Nuclear Science](#) [Search](#) [Forum](#) [Calculator](#) [Privacy](#) [Legal](#) [Logout](#)

**nucleonica** ... web driven nuclear science

Applications My Preferences Print Help

» **Nucleonica Networking**

- » Start
- » My Profile
- » My Contacts
- » My Mailbox
- » My Groups

» **Tools**

- » Forum
- » Conference Calendar
- » Graphics Module

» **Applications Portal**

- » nuclear science

» **Coming soon**

- » Cambio File Converter

» **New Nucleonica Training Course... ITRAC-2** August 17, 2009

The 2nd Advanced Training Course on Illicit Trafficking and Radiological Consequences (ITRAC-2) with NUCLEONICA will take place at ITU, Karlsruhe from the 4-6th November 2009.

» **Nucleonica Blog**

- » **Discovery of element 112 contested**
- » **Visit of Frau Mergen, Mayor of Karlsruhe**
- » **Nucleonica presentation at Border Monitoring Working Group**
- » **NUCLEONICA team takes part in IAEA research contract meeting**

Welcome, Joe

[Edit Preferences](#)

[My Profile](#) [My Community](#)






» **My Community Events**

- You have 0 new messages
- You have 0 new contact list requests

» **Recent Nucleonica Members**

- Michael Welland
- Alain LEBRUN
- Pierre Soubourou
- Srnck Michaela

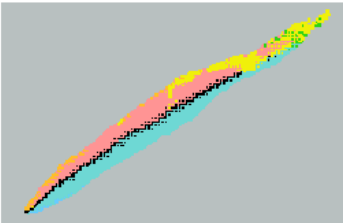
**nucleonica** [wiki]

Logged in as: magill   Search  Calculator  Legal 

**nucleonica** ... web driven nuclear science

Applications My Preferences Help


► Nuclide Explorer



» Actual Chart: Karlsruhe

► Search Nucleonica Documentation

 Nuclear Data Retrieval

**nucleonica**  
[wiki]

► Application Centre

- » Mass Activity Calculator
- » Decay Engine
- » Dosimetry & Shielding
- » Range & Stopping Power
- » webKORIGEN
- » Universal Nuclide Chart
- » Transport & Packaging
- » Nuclide mixtures
- » Nucleonica Scripting
- » Library creation for 3rd party software
- » Radiological Dispersion Module
- » Gamma Spectrum Generator (IE only)
- » easy Monte Carlo (IE only)
- » Cambio file Converter
- » Extended Graph Module

► Data Centre

- » Physical Constants
- » Nuclide Reference Data
- » Nuclide Derived Data
- » Average Cross Sections
- » Radiations
- » Prompt Gamma
- » Fission Yields

► Knowledge Centre






- » Nuclear News
- » Reading room

Welcome, Joe






[Edit Preferences](#) [Administration](#)

MyCommunity Portal



► My Last Nuclides

-  94 Pu239
-  56 Ba133
-  77 Ir192
-  27 Co60
-  53 I123

► My Nuclide Mixtures

-  U232(0.4g)+Co60(0.6g)
-  Ba-Pu
-  U232+Co60
-  Transuranics in 1 ton Spent Fuel (4.2% enriched, 50GWd/t, 6 years cooling)
-  Natural Uranium

► My Sources

-  name3\_srce.xml
-  Pu239 1 g

► My Messages

No messages for you at the moment

► User Alerts

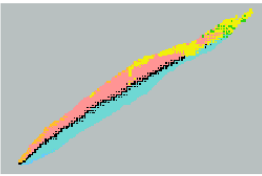
No alerts at the moment

Logged in as: [magill](#) [Networking](#)

**nucleonica** [wiki] ... web driven nuclear sci

Applications My Preferences Help


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» Actual Chart: Karlsruhe

► Search Nucleonica Documentation

Nuclear Data Retrieval



► Application Centre

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► Knowledge Centre

- » Nuclear News
- » Reading room

**nucleonica** [wiki]

[help](#) [discussion](#) [edit](#) [history](#) [delete](#) [move](#) [watch](#)

## Help:Mass Activity Calculator

[watchlist](#) [my contributions](#) [log out](#)

[All pages](#)

[File Converter](#)  
[Engine](#)

[Products and Yields](#)  
[Group Pages](#)  
[on and Setup](#)  
[Creation for 3rd party software](#)  
[portal](#)  
[ca@NESTet2008](#)  
[ca at a glance](#)  
[Explorer](#)  
[2000](#)  
[allery 1st Nucleonica ITCM](#)

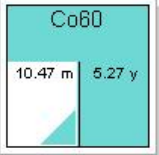
[ivity in a Suitcase](#)  
[e Notes](#)  
[al Support](#)  
[Nuclide Chart](#)

**Contents [hide]**

- 1 Introduction
- 2 Nuclide Selector
- 3 Unit/Quantity Selector
- 4 Unit Conversion
- 5 Simple Decay and the Decay Constant

### Introduction


The mass activity calculator is used to convert between the number of atoms, activity (Bq or Ci)



**Mass Activity Calculator**  
**27 Cobalt**

Actual Chart: Karlsruhe

Element: Mass:



Unit:  Quantity:










Unit	Quantity
Grams	1.0000E+00
Becquerel	4.1871E+13
Curies	1.1317E+03
Number of Atoms	1.0048E+22

Mass Activity Calculator interface showing the Nuclide Selector, Unit/Quantity selector, and the Unit/Quantity Table.


... web driven nuclear science

**ITRAC-2: 2<sup>nd</sup> Advanced Training Course on  
 Illicit Trafficking and Radiological Consequences with NUCLEONICA  
 Institute of Transuranium Elements, Karlsruhe, 4-6<sup>th</sup> November 2009**

## Agenda:

Day 2:	<b>Illicit Trafficking</b>		Chairman: M. Wallentin
Day 3:	<b>Radiological Consequences</b>		Chairman: A. Berlizov
9:00	 <del>Cambio</del> File Translation Application	 Exercises	G. P. Lasche, Sandia
10:00	 Gamma spectrometric techniques in radiation monitoring at borders - importance of spectrum modeling		R. Arlt, formerly IAEA
10:30	Coffee		
11:00	 Cloud Rise Model for a RDD Scenario Analyses	 Exercises	A. Sharon, NRCN
12:30	Lunch		Chairman Z. Solti
13:30	 Management of the <sup>210</sup> Po case in Hamburg	 Exercises	J. Kesten, BfS
14:30	Coffee		
15:20	Feedback, Questionnaire, Certificate		All
16:00	End of Training Course		
16:30	 Masking of Nuclear Materials		V. Kleinsch, ITU
16:45	 Experiences with the Library Creation module		M. Smolik, ITU
17:00	End of Session		

Good Luck!



Thanks!



nucleonica

